

CLAIMS:

1. A process for the fabrication of a polymeric optical microstructure, being supported or not by a substrate, starting from a thermoplastic mixture, wherein a thermoplastic polymer is blended with a UV curable resin and a thermally stable photo-initiator, to obtain a blend having a lower viscosity than the viscosity of said polymer, said blend being molded and the molded blend being cured by means of UV radiation to obtain a polymeric optical microstructure.
2. A process according to claim 1, wherein said thermoplastic polymer has a weight-average molecular weight from 0.1 to 5 times the critical molecular weight for entanglement, M_{cr} , more preferably in the range from 0.5 to 2 times M_{cr} .
3. A process according to claim 1, wherein said thermoplastic polymer contains a minor amount of reactive groups.
4. A process according to claim 1, wherein said thermoplastic polymer is an amorphous thermoplastic polymer.
5. A process according to claim 1, wherein said thermoplastic polymer is a copolymer or terpolymer.
6. A process according to claim 1, wherein said thermoplastic polymer is selected from the group, consisting of polymethylmethacrylate, polyethylmethacrylate, polyhexylmethacrylate, polydecylmethacrylate, polymethylacrylate, polyethylacrylate, polyhexylacrylate, polydecylacrylate, polyvinylacetate, polystyrene, poly- α -methylstyrene, poly- α -ethylstyrene, polycarbonate, polyester, cycloolefinic polymer and cyclo-olefinic copolymer.
7. A process according to claim 1, wherein the concentration of the UV curable resin is from 20 – 80 vol.%, more preferably from 40 – 60 vol.% of said blend.

8. A process according to claim 1, wherein said UV curable resin is an epoxy resin, preferably diglicidylether of bisphenol-A.

5 9. A process according to claim 1, wherein said UV curable resin is selected from the group of acrylates and methacrylates, preferably ethoxylated bisphenol-A dimethacrylate, hexanedioldiacrylate and polyethylenediacrylate.

10. 10. A process according to claim 1, wherein said thermoplastic polymer and said 10 UV curable resin show a substantially similar refractive index.

11. 11. A process according to claim 1, wherein said substrate consists of metal, polymer, silicon, glass or quartz-glass.

15 12. Use of a blend of a thermoplastic polymer, a UV curable resin and a thermally stable photo-initiator in the fabrication of an optical microstructure having a thickness of at most 1 mm, preferably at most 0.5 mm.

20 13. Use according to claim 12, wherein said thermoplastic polymer is polymethylmethacrylate and said UV curable resin is the diglicidylether of bisphenol-A.

14. Use according to claim 12, wherein said optical microstructure is selected from the group consisting of a lens, Fresnel lens, collimator, diffractive optical element, LED window, optical storage medium and LCD back and front lighting system.

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15. Use of a blend of a thermoplastic polymer, a UV curable resin and a thermally stable photo-initiator in the fabrication of a microfluidic device containing internal channels with a height of typically less than 1 mm, preferably less than 0.5 mm.